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TRAUMATIC CATARACT WITH OCCLUSION OF PUPIL BY FALSE MEMBRANES AND COLOBOMA OF THE IRIS.

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Unfortunately cases of irido-cyclitis are not very rare and even under the most skillful hands sometimes go from bad to worse. The results of these cases are usually left alone, especially when only one eye has been affected.

The case cited below may be deemed rather uncommon, both from the number of traumatisms and the fortunate results obtained by the operations.

August 1, 1888, J. H. B., male, white, æt. 25, a blacksmith, was sent to me by Dr. Pyles, of Anacostia, D. C.

Previous history: On April 15, 1888, while working at the forge, he was struck by a piece of hot metal from a horseshoe upon the inferior nasal quadrant of the *left* eye, on the sclerotic near the limbus. The eyes were open at the time of the blow. He suffered no immediate consequences except smarting of the eye, and resumed his work on the following day. About forty-eight hours later the sight of this eye became dim and within a few hours all vision was lost.

He consulted an ophthalmologist and about a month later he resumed work. On May 20, he was again struck, this time by a piece of cold metal (a chip from the hammer) upon the closed lids of the *right* eye. The organ became very much inflamed, but as the patient was out of work it received no

special treatment. The patient, being nearly blind, applied later at several hospitals, but received no encouragement.

Present condition: Somewhat anæmic, but no general disease could be detected. L. E.; V.=$^{2}/_{cc}$; Tn—1; scotoma in upper and outer portion of visual field; small depression on lower nasal quadrant of sclerotic. Ophthalmological examination; extensive detachment of retina in lower nasal quadrant corresponding to scar on outside of sclerotic. There seemed to be considerable subretinal fluid. R. E.; V=perception of light; Tn; slight ciliary congestion; cornea and aqueous clear; anterior chamber very shallow; exclusion of the pupil (no communication between anterior and posterior chambers); vertical coloboma of iris (Fig. 5); pupillary space completely filled by masses of exuded lymph; the iris muddy and swollen; slight pain in blephorospasm. Everything pointed to

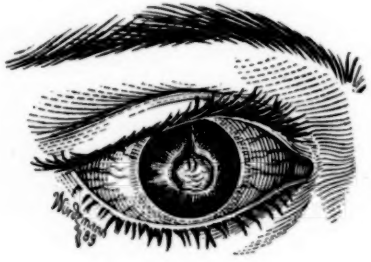

FIG. 5.

this as the result of a severe plastic iridocyclitis with some remaining irritation.

Treatment: Tonics; $^{1}/_{2}\%$ sol. of atropine and hot fomentations to R. E.

October 20, 1888, all signs of inflammation having subsided, a 5% sol. of atropine was dropped into the eye morning and night for one week.

November 9; general health improved; L. E. The subretinal fluid has been absorbed but now a rupture of the choroid is observed, and the choroid and retina seem to be undergoing

atrophy. The scotoma has extended to the entire outer half of the visual field and V=fingers at one meter.

R. E. No iritis; a little more light observed through the pupil; visual field good by candle test. Ordered alterative mixture.

November 16; hoping that the edge of lens might be clear and wishing to establish a communication between the anterior and posterior chambers, I made a large downward iridectomy on the R. E. under cocaine, and also clipped one side of the iris free from the membranes by scissors described below.

November 25; the lens was found translucent enough for the patient to count fingers at $1^1/_2$ meters. The iris had fallen back to a normal position. The choroid and retina of L. E. slowly becoming atrophied.

February 1, 1889; the lens of R. E. had been gradually becoming opaque until vision was again reduced to the perception of light. The operation of discission of the cataractous lens was resorted to at intervals of three weeks.

April 20; the capsule and false membranes were torn through by use of two needles and a small black pupil appeared, and some lense substance still remained and was broken up. Patient could count fingers after the operation.

May 10; as the hole in the false membrane had closed, a new artificial pupil was made as before, by two needles; at the same time some synechiæ were cut, blood being effused into anterior chamber, and when seen a few days later the pupil was again occluded.

May 15; while skylarking in his room he received a slight blow upon L. E., which destroyed its remaining vision. Ophthalmoscopic examination disclosed a new dislocation of the retina in the outer segment. V=perception of light in only the lower portion of field. Tn.—1. This was the third accident happening to the eyes in one year.

May 25; under antiseptic precautions, the lids being fixed by a stop speculum and the ball held steady by an assistant, I made an incision with a keratome, 7 mm. long, in the upper portion of the cornea; then passing the long iris forceps into

the anterior chamber the membranes were seized about the center of the pupillary space and dragged forward until they touched the posterior layer of the cornea (Fig. 6). Then my delicate iris scissors were carefully passed into the anterior chamber and the portion of membrane seized by the forceps was cut out, leaving a clear button hole pupil. (Fig. 6). The

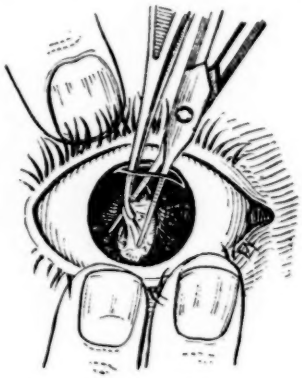

FIG. 6.

adherent colomba was excised by a simple iridectomy. A few small vessels being cut during the operation occasioned some hæmorrhage. The blood in the anterior chamber was

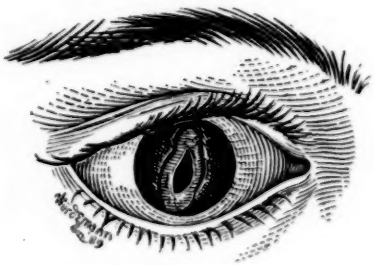

FIG. 7.

washed out by a solution of corrosive sublimate 1:5000. The eye and lids were again bathed in the antiseptic solution and a compress bandage put on. The portion of membranes excised was nearly 2 mm. in thickness.

May 29; a large blood clot was seen in the anterior chamber and V=perception of light; ordered iodide of potassium in warm milk.

June 11; the blood had been absorbed and V. counting fingers at 2 meters and with+120=$^{5}/_{L}$; disc and retinal vessels were distinctly observable by the ophthalmoscope. Later I shall probably make some change in the glass correcting any existing astigmatism. By the aid of this glass the patient can see distinctly faces and read very large print. He is thus transformed from a charge upon the community to a producer—as he is now fitted to take up some kind of work.

Needing a pair of very delicate scissors for the operation described above, and not liking such complex affairs as De Wecker's, I designed a pair which were very skillfully made for me by the firm of Tiemann & Co. Mr. Stohlman of that firm has suggested the name of "Humming-bird-beak scissors" from their extreme delicacy.

These scissors bite perfectly in the whole length of the

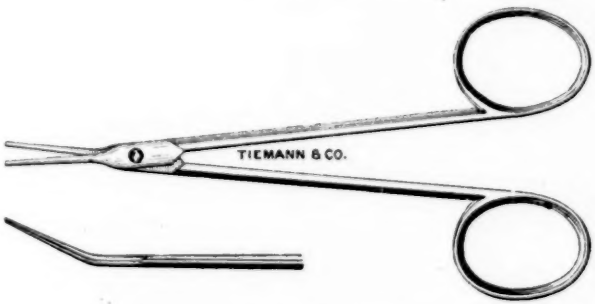

FIG. 8. TWO-THIRDS ACTUAL SIZE.

blades and are applicable for "inside" operations; they can also be used for iris operations and subconjunctival tenotomy. The instrument has exceeded my expectations both from its exquisite finish and perfect working qualities. The other points claimed for it are extreme simplicity and perfect asepsis. The blades can be taken apart in a moment by means of the "antiseptic" lock and are thus very easily cleaned.

CORRECTING THE WHOLE ERROR OF REFRACTION, AND THE NECESSITY FOR THE USE OF A MYDRIATIC.[1]

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While the specialty of ophthalmology is yet in its early youth, this subject of the correction of errors of refraction, if not actually in its swaddling clothes, is at least a *vexata questio*. It is remarkable how teachers of ophthalmology differ point-blank in their views concerning the matter of fitting glasses for ametropia. I say *ametropia*, because I do not wish to include in this paper *presbyopia*, which is simply the need of glasses for advancing age. Some will claim that it is possible by means of the ophthalmoscope alone, to measure refraction, without paralyzing the accommodation. Practically, it is just about as easy to do this as it is to catch a bird by simply throwing salt on its tail. Others admit the necessity for the use of the mydriatic, but many of these disagree as to how much, or if the total error should be corrected.

I can certainly say that the most glaring errors which I have encountered have been in patients who have previously been in the hands of oculists who pretended to fit them for glasses without using a mydriatic. It seems hardly necessary to argue the impossibility of getting at, by means of the ophthalmoscope alone, the true state of the refraction of an eye whose ever varying muscle of accommodation must undoubtedly vitiate any attempt to measure its refraction. Of course I do not mean that we should not verify (after the use of atropine) our

[1]Read before Georgia State Medical Society at Macon, April 18, 1889.

work, with the ophthalmoscope. To leave it aside we would be liable to make serious errors, and possibly overlook amblyopia, etc. So thoroughly am I convinced of the absolute necessity of using a mydriatic, believing as I do that there is without its use such a serious element of doubt about this most difficult and delicate work, that I have adopted its employment as my rule, invariable and positive. That I have driven away possible patients who would not submit to it, there is no doubt whatever. Yet it would be a short sighted policy, to say the least of it, which would permit any oculist to let this influence him in such a matter. As to fitting the whole error: If a patient's total hypermetropia is $^1/_{20}$, why should we give him a glass which corrects only $^1/_{36}$, $^1/_{48}$, or less. Common sense ought to dictate that when we have to deal with an ametropic eye we should ascertain (by completely paralyzing the accommodation) just what the total error is. Then we should, with a fully correcting glass, bring the eye up to a condition of normal refraction (emmetropia); then the ciliary muscle will have just the normal amount of focussing to perform. When I use the term mydriatic, I do not mean a one or a two grain solution of atropia, which simply dilates the pupil, and only partially paralyzes the accommodation. I use a four grain to the ounce solution, and drop it in the eye sufficiently often to make the muscle thoroughly passive. If I had no other reason, there is one special class of cases in which I would especially insist upon the free use of atropine. These are young hypermetropes who from excessive use of their eyes have brought on spasm of the ciliary muscle. When their vision is tested they have apparent myopia. They will accept—(concave) glasses, when if we paralyze their accommodation they will require + (convex) glasses. If their parents object to the use of glasses, or we, for any reason, think it advisable to not prescribe glasses for them, there is no better treatment than the enforced rest which thorough atropinization brings about for the tired and irritated muscle.

I am more and more convinced, by daily observation, that very many cases of real myopia begin in this way among

children who are hypermetropic. Their myopia *apparent* only, at first, has by over use of the eye and ciliary spasm, become a *real* myopia at last. At the present, I am rather opposed to prescribing glasses for young *near-sighted* persons, yet I feel that the oculist who does not do all he can to call the attention of the profession to the very great importance of having many of the errors of refraction in young persons scientifically corrected, does not do his duty. Upon no subject perhaps are the laity so grievously ignorant. They are too willing to allow this important and most difficult of the oculist's work to be done in a haphazard way by opticians and itinerant spectacle peddlers. Many a young person with normal eyes, except for some easily remediable error of refraction is handicapped and pushed to the wall in the battle of life.

Of the very many cases in which the whole error was corrected, I have kept up very carefully with some seventy or eighty. In these seventy or eighty I have only in two cases found it necessary to afterwards modify the strength of the glass. The following cases are perfectly fair samples of those to be found in my case book. As a *rule*, I find it best to fit the whole error, though of course there *are* cases, for instance, where the patient's range of accommodation is considerable, where common sense plainly indicates a modification of the rule.

Case 1. Miss E., æt. 16 years. Her eyes ache severely whenever she studies. Conjunctivæ congested and suffused. Retinæ congested—not as a disease *per se*, however, but simply as a sympton. Her mother had about decided that it was useless for her to attempt to continue her studies. Vision appears as if she were myopic. Right=$^{20}/_{XL}$, L.=$^{20}/_{XL}$, she accepts —cylindrical glasses, axis at 180°. Under atropia the true condition is shown up. She had spasm of the ciliary muscle, with atropia R. vis.=$^{20}/_{LXX}$, L. vis.=$^{20}/_{L}$, R. and L. w. $+^{1}/_{60}$ ⊃ cyl. $+^{1}/_{72}$ axis 90°=$^{20}/_{XX}$, and with these glasses for close use she had in two weeks' time sufficiently recovered and resumed her studies. She is now pursuing a very severe curriculum of study in a Northern seminary, in perfect comfort.

CASE 2. Mr. W. (book-keeper), æt. 23 years. Increase of his duties lately has brought on all of the symptons described in Case 1, only to a very much severer degree. He cannot hold his eyes open even, from photophobia. It took about ten or twelve days' careful treatment and absolute rest of his eyes to get him ready to have his refraction tested. Vision before use of atropia. R.=$^{20}/_{XX}$ L.=$^{20}/_{XV}$ nearly. With atropia, R. and L.=$^{20}/_{XL}$; R. and L. w. + $^{1}/_{40}$=$^{20}/_{XV}$. With these glasses he almost immediately secured perfect comfort. Of course, he only needs glasses for close work, but with them for distance even, he reads $^{20}/_{XV}$. When he first came to me he had been trying to use two diffierent pairs of glasses, each fitted at haphazard by two diffierent eye specialists who had not used atropine. One had given him a + $^{1}/_{60}$, and the other a + $^{1}/_{28}$.

CASE 3. Miss. M., æt. 25 years: Health delicate, evidently from lack of out-door exercise; vision, R. and L. $^{20}/_{XXX}$. Had very frequent and severe headaches, especially upon close use of her eyes. She had been treated for quite a long while by an oculist for congestion of the retina. He had forbidden her to practice at the piano. I could not, upon careful examination with the ophthalmoscope, discover at this time any congestion of either retinæ. She informed me that her former oculist had simply advised her to go to some dealer and select a "weak" glass, say a + $^{1}/_{60}$ and try them for close use. As she exhibited some of the symptoms of astigmatism, I insisted upon testing her refraction. I found her whole error to be corrected R. and L. by + $^{1}/_{60}$ ⊃ cyl. + $^{1}/_{48}$, axis 90°. Vision with these, R. and L.=$^{20}/_{XX}$. With these glasses for close use she gets a hundred fold more comfort than she did before she was correctly fitted. She informs me also that she practices at the piano as much as she wishes to. We hear too much about congestion of the retina as a disease, *per se*. I can almost say I do not encounter it, that is, *very rarely*, except as a concomitant of some error of refraction.

CASE 4. Mr. S., book-keeper, æt. 26 years. Has since childhood had an annoying inflammation of the eyelids

(blepharitis marginalis), and now it has grown so severe, unless he gets relief he fears he will lose his position. Vis. R. and L. $^{20}/_{XXX}$. Greatly objects to the use of, or even trial of glasses, but finally submits to the test. Under atropia R. and L. $= {}^{20}/_{LXX}$. R. w. $+ {}^{1}/_{30} \supset$ cyl. $+ {}^{1}/_{60}$ ax. 90° $^{20}/_{XX}$. L. w. $+ {}^{1}/_{24} \supset$ cyl. $+ {}^{1}/_{72}$ ax. 90° $= {}^{20}/_{XX}$. I had great difficulty for two months to persuade him to persist in the use of the glasses for all near work, but he finally became a thorough believer. He is now perfectly delighted with his glasses, and says that but for them he knows he would have lost his place. His vision now with glasses at distance is $^{20}/_{XX}$, though of course he only needs them for close use.

CASE 5. Miss W. æt. 18. years. In perfect health, though she frequently and severely suffers with headaches, especially whenever she engages in drawing or painting. Vision normal, ($^{20}/_{XX}$). With atropia R. $^{20}/_{C}$, L. $^{20}/_{LXX}$. R. w. $+ {}^{1}/_{24}$ and L. w. $+ {}^{1}/_{30}$, vis. $= {}^{20}/_{XX}$. She wrote me recently that her glasses had effected a perfect cure of her trouble. She had no trouble in using them from the first.

We must not overlook the fact that though there may be normal or even more than normal acuteness of vision, yet there may co-exist serious errors of refraction which, in order to see clearly for close distance, the patient must overcome by exerting to an abnormal degree his muscle of accommodation. I myself—as will be shown further on—while my vision was always $^{20}/_{XV}$, am by no means blessed with emmetropic eyes.

CASE 6. Miss McK. æt. 18 or 20 years, music teacher. Came to me to be treated for granulated lids, which she said her oculist where she had formerly lived, had nearly cured by several months' treatment. He had not tested her refraction. She says she knows she is near-sighted, as indeed she really appears to be. She just wished her lids treated. She has no idea of using glasses. As I can find no trouble of the eyelids, it appears to me as if she is suffering from ciliary spasm. After a while she consents to a test of her refraction. Under atropia her vision is R. $^{20}/_{L}$, L. $^{20}/_{LXX}$, R. and L. w. $+ {}^{1}/_{48} = {}^{20}/_{XX}$. The use of these glasses soon gave her great relief, and as she expresses it, "they are her best friends."

CASE 7. I will show the importance of using a mydriatic in anything like peculiar cases of presbyopia. Mrs. W., æt. 48 years has "had trouble all her life with her eyes." She has never found any satisfactory glasses; vision, R. and L., $^{20}/_{XL}$, with atropia R.=$^{20}/_{L}$, L.=$^{20}/_{LXX}$, with +$^{1}/_{30}$, R.=$^{20}/_{XV}$, L.=$^{20}/_{XXX}$. Her presbyopia is $^{1}/_{20}$, and this added to her total hypermetropia (+$^{1}/_{30}$)=$^{1}/_{12}$. With + $^{1}/_{12}$ glass she reads and sews in comfort; at her age, she of course supposed she would not need a +12 glass, and was very much surprised when I ordered it for her.

CASE 8. shows how an uncorrected error of refraction may entail serious intra ocular disease if not promptly attended to. Mr. L., æt. 32 years, (banker) is very closely occupied in his counting-room. He came to me last January with a very serious and most obstinate iritis, especially in the right eye. Large masses of lymph in the aqueous and vitreous. Vision, R.=$^{20}/_{CC}$, L.=$^{20}/_{XXX}$. Accepts—glass, but, of course, no special test of refraction was attempted. After a five months' tedious case of iritis he was discharged as cured. When carefully tested his vision, under atropia, was R. $^{20}/_{LXX}$, L. $^{20}/_{C}$, R. and L. w.+ $^{1}/_{30}$=$^{20}/_{XV}$. For prudential reasons I did not give him the fully correcting glass, but ordered a + $^{1}/_{36}$. With their use he has fully resumed his duties, and I have just had a letter stating that he considered himself fully relieved. In this case there was absolutely no other cause for his iritis than his uncorrected error of refraction.

CASE 9. Mr. C. (book-keeper), æt. 28 years, has had for two or three years a very troublesome conjunctivitis, and thinks of giving up his occupation. Refuses, however, to consent to the mydriatic, and goes home. In two months' time he returns and a test is made. His vision is, R. and L. $^{20}/_{XX}$; with atropia, R. and L. $^{20}/_{XXX}$, with + $^{1}/_{60}$, R. and L.=$^{20}/_{XV}$. It is remarkable but true, that this slight error of refraction caused all his trouble. With these + $^{1}/_{60}$ glasses he was almost immediately relieved of all his unpleasant symptoms.

CASE 10. Miss R. æt. 17 years. Three years ago I operated upon both internal recti for a strabismus of over three lines.

The operation was successful. She had not been able to use her eyes at study to amount to anything. Her vision was R. $^{20}/_{CC}$, L. $^{20}/_{XL}$. Under atropia, w. + $^{1}/_{18}$, R.=$^{20}/_{L}$. Under atropia, w. + $^{1}/_{24}$, L.=$^{20}/_{XX}$. March 14th, last, I saw her and found her vision with glasses was the same as it was three years ago, and in spite of her amblyopia, she gets along very comfortably, with a moderate amount of study. She gets most comfort from the *constant* use of her glasses.

Usually in young persons with strabismus, there is of course hypermetropia, and the surgeon who simply operates for cross-eyes does not do his whole duty if he neglects to fit, or advise the correction of the error of refraction.

I think these three final cases should convince us of the impossibility of surely showing up the real error without the use of a mydriatic.

CASE 11. Mrs. R., æt. 25 years. Has had great trouble for several months with her eyes, aching of the balls, and inability to read or sew. Vision R. and L. $^{20}/_{XX}$. With atropia, R. and L. $^{20}/_{CC}$. It took three careful sittings of over an hour each to find the proper correction. At the first she accepted a + $^{1}/_{18}$ glass, and appeared as if not astigmatic. But at the third one it was clear that the proper glass was R. w. + $^{1}/_{24}$ ⊃ cyl. + $^{1}/_{72}$ ax. 90°=$^{20}/_{XX}$. L. w. + $^{1}/_{24}$ ⊃ cyl. + $^{1}/_{48}$ ax. 90°= $^{20}/_{XX}$. These glasses while they worried her at first, soon relieved her of her trouble.

CASE 12. Mr. W. æt. 28 years, theological student. Is trying to use a + $^{1}/_{36}$ glass, which was prescribed for him by an eye specialist two years ago, but he is confident his glasses are wrong. Is unable to study with any degree of comfort. Vision R. $^{20}/_{XX}$, L. $^{20}/_{XXX}$. With atropia, R. and L. $^{20}/_{XL}$. R. w. + $^{1}/_{72}$ ⊃ —cyl. $^{1}/_{72}$ ax. 30°=$^{20}/_{XX}$. L. w. + $^{1}/_{48}$ ⊃ —cyl. $^{1}/_{72}$ ax. 70°=$^{20}/_{XX}$. These glasses have given him entire relief.

As to my own case, I had suffered for years with my eyes. More or less constant conjunctivitis, and severe headaches upon close use of my eyes. Ophthalmoscopic work had become especially trying. Even when at the theatre, or when I visited picture galleries, I would generally come away with severe

headaches. I wished to feel that I was not ametropic, and supposed that my trouble was due to my rather delicate general health, close study, etc.

Two distinguished oculists had examined my eyes (my vision was $^{20}/_{XV}$ easy). One of them told me that I was emmetropic and needed no glasses. The other told me I was hypermetropic and advised me to use a $+ {}^{1}/_{60}$ or a $+ {}^{1}/_{48}$ glass for close use. Faithful trial of both these glasses did me no good. Finally I saw that something must be done. I had gotten so I could not read a newspaper through, and I did not dare to read at night. As the former test of my eyes had not been made under atropia I thoroughly atropinized one eye one week and the other the next week. By this means I could carry on my work with one eye. Under atropine, R. and L= $^{20}/_{c}$. R. and L. w. $+ {}^{1}/_{48}\supset$cyl. $+ {}^{1}/_{48}$, axis 90°=$^{20}/_{XV}$.

I also had a pair of cylindrical $+ {}^{1}/_{48}$, axis 0°, made for occasional use at distance. I frequently find these latter very beneficial to rest my eyes.

As to my fully correcting compound glasses, they are almost a revelation to me. I am quite sure that no one who has emmetropic eyes can appreciate the extreme degree of comfort which they have given me. I am astonished—indeed I may say almost uneasy—at the amount of extra use to which I frequently put my eyes now. At first my fully correcting glasses gave me great trouble. They would cause a most unpleasant giddiness and, very frequently, aching in the temples, but by persisting in their use until I gradually became accustomed to relaxing my over-accommodation, they soon gave me, as I said, great comfort. While I only use them for close work, my vision is with them now $^{20}/_{x}$ easy.

In regard to the more recent (and very expensive) mydriatic, homatropine, the effect of which is so much more evanescent upon the accommodation than atropia, my experience is yet so recent with it that I am not prepared to give an opinion concerning it. Usually I have found that after its full effect the accommodation is restored in thirty-six to forty-eight hours. It is almost amusing to note the difference in opinion

as to its value, held by various eye surgeons. Recently two distinguished oculists, each surgeon to large eye hospitals in two different cities North, gave me their opinion of it. One claimed that it only partially paralyzed the accommodation and that he had abandoned its use. The other said it fully paralyzed the accommodation and that he used nothing else in refraction work. At the present writing my experience is that it does not generally *fully* paralyze the accommodation.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, JUNE 13, 1889.

J. W. HULKE, F. R. S., President in the Chair.

ON THE APPARENT MOVEMENT OF OBJECTS ASSOCIATED WITH GIDDINESS.—Dr. Beevor read this paper, and began by defining giddiness as: (1) the apparent movement of objects in definite directions; (2) the sensation of the person himself moving round, and (3) both sensations combined. In certain cases of epilepsy giddiness had been observed as an aura, and in the large majority of these cases, the apparent movement of the patient and of objects round him were in the same direction and generally corresponded to the direction of initial rotation of the head in the fit. In auditory vertigo, in most cases, the apparent movement of the patient was in the opposite direction to that of objects round him. With the actual movement of objects before the eyes giddiness was produced, as in the case of a waterfall, but only that part of the retina perceived secondary after-movements which was acted on by the image of the falling body; the after-movements were always in the opposite direction to the real movements. If the eyes were fixed, giddiness was not produced, but the secondary after-movements were, and the author thought it highly probable that the latter could be produced by a complementary sensation of movement in the rods and cones of the retina which had become exhausted by the continued movement.

Dr Collins said that Dr. Beevor's views were in opposition to those taught by Helmholtz and all other writers up to the present date.

Mr. Silcock inquired as to the duration of the after-sensations, observed by the author after looking at falling water.

Dr. Beevor in reply said that while he did not deny the correctness of Helmholtz's views, he was unable to explain thereby how a strip of the retina only could be affected by after-movements and not the whole field of vision. Helmholtz stated that if the eyes were fixed no giddiness was produced by the appearance of moving objects, but this did not tally with Professor Thompson's experiments with two oppositely rotating discs, to which Dr. Beevor referred.

On Some Forms of Traumatic Keratalgia.—Dr. Bronner (Bradford) read a paper on this subject, and reminded the Society that Dr. Grandclément had drawn attention to the affection at the Ophthalmological Congress in Paris in 1888. The peculiar feature of these cases was the severe pain resulting from a very small wound of the cornea, which pain recurred usually in the mornings, often for several months. He read notes of some cases, in one of which the pain lasted for eight months, and was so intense that the patient wished to have the eye removed. Relief was obtained by excision of a small macula at the site of the wound. In another patient the pain continued for two years. The author suggested, as treatment for these cases, the use of hot fomentation for several weeks, followed by massage with yellow oxide of mercury ointment. If these remedies failed, the excision of any cicatrix resulting from the wound should be tried.

Mr. Bailey suggested that the cases might be in a measure hysterical, though the presence of a corneal cicatrix showed that some structural change had occurred.

The President remarked that the pain and other symptoms were frequently more severe in superficial injuries of the cornea than in deep wounds, possibly because in the former case a large number of the extreme terminations of the nerves were lacerated. In most cases where there was removal of epithelium, if the eyeball were fixed, the epithelium rapidly reformed, but in a few the pain persisted apparently after the wound had healed.

Dr. Collins thought all the cases of superficial injury to the cornea got well if treated with rest and atropine.

Mr. Jonathan Hutchinson, Jr., referred to Dr. Bronner's suggestion that a chemical irritant might be present, and mentioned the case of a boy who injured his eye with a steel pen nib and ink-stained the cornea. Pain persisted for a long time in spite of careful treatment.

Mr. Nettleship thought the Society was indebted to Dr. Bronner for calling attention to these cases. He had long been familiar with cases in which a simple abrasion of the cornea appeared to relapse after a considerable interval of time, and suggested that in these instances the epithelium had not undergone vigorous repair, and the scar easily broke down again. He asked Dr. Bronner if the destruction of the macula on the cornea by means of the galvano-cautery might not be as efficacious as excision of the scar.

Penetrating Wound of the Globe, with Eyelash in the Anterior Chamber.—Dr. Collins read notes of this case, occurring in a man æt. 44 years. The injury was caused by a knife thrust. A sclero-corneal wound resulted, with prolapse of iris; and when the patient was first seen, forty-eight hours after the accident, a cilium was observed lying on the anterior surface of the iris; this was removed without difficulty with a Tyrrell's hook and iridectomy forceps. Rapid recovery ensued, and a month later V=$^{5}/_{XII}$ and J. 1 with correction. Three similar cases had been recorded by Messrs. Rockliffe, Power and Couper.

On the Light in Optic Neuritis.—Mr. Berry (Edinburgh) communicated this paper, which was read by the Secretary. Four cases of double optic neuritis from cerebral disease had been examined. In all the acuity of vision was normal, and when tested with Bjerrum's types no light-difference defect was discovered, although the changes seen at the optic papillæ were very pronounced. This fact established a distinction between cases of ordinary optic neuritis and of retro-bulbar neuritis, which was suggestive of different alterations in the nerves in the two diseases.

On a Case of Subconjunctival Cysticercus.—Mr. Gunn for Mr. Werner (Dublin) read notes and exhibited drawings of this case. The patient was a lad æt. 7 years, and on depressing his right lower lid a smooth ovoid semi-translucent cyst was exposed, the size of a large pea and of a reddish yellow colour. It was situated between the sclera and conjunctiva and was freely movable under the latter. When examined by focal light a small opaque circular spot was visible, near the centre of its anterior surface which cast a shadow in the interior of the cyst. After removal, which was accomplished without difficulty, the microscope revealed in the interior of the sac the head and neck of a bladder-worm, with four suckers and a circle of thirty hooklets, large and small, to which succeeded a much-wrinkled neck, sprinkled over with the usual calcareous corpuscular particles. Measurement of the hooklets and the appearance of the wallsof the vesicle proved the parasite to be cysticercus cellulosæ, the cystic stage of tænia solium.—(*British Medical Journal.*)

REPORT OF THE 25TH ANNUAL MEETING OF THE AMERICAN OPHTHALMOLOGICAL SOCIETY.

Held at the Pequot House, New London, Conn., July 17 and 18, 1889.

Wednesday.—Morning Session.

The Society was called to order by the President, Dr. Wm. F. Norris of Philadelphia.

The first paper read was:

An Analysis of Ninety Cases of Simple Chronic Glaucoma with Special Reference to the Effects of Iridectomy upon the Acuity of Vision and the Visual Field.—By Dr. Charles Steadman Bull, New York.

Detailed histories of the ninety cases were presented and the following conclusions formulated:

In endeavering to draw some rational conclusions from the study of ninty cases, it seem wise to begin with a quotation from Priestly Smith, to whom ophthalmologists owe so much of their knowledge of the pathogeny and pathology of glaucoma,

1. In considering the expediency of an operation in chronic glaucoma, he says: "In every case of chronic glaucoma, the responsibility of advising an operation is a heavy one and should on no account be undertaken without a full explanation to the patient or his friends of the almost positive certainty of blindness on the one hand and of the uncertainty which beset the operation on the other. Having regard to the age of the patient, the impossibility of great benefit and the possibility of a painful and accelerated progress, the prudent surgeon will only operate on the express desire of the patient to receive the only possible chance of benefit, however small it may be." Armed with the preceeding precaution, it seems to be our duty to operate in cases of chronic progressive glaucoma, and the earlier the better.

2. If the disease in a given case seems to be stationary and is still in the primary stage and if it be possible to test the vision and visual field at short intervals, delay in operating is permissible, but a weak solution of eserine or pilocarpine shall be used daily, merely as an aid in controlling the course of the disease. The examination of these patients should be at short intervals and should invariably include tests for visual acuity and the careful examination of the visual field.

3. If the disease exists in both eyes but with useful vision in both eyes, the eye in which the disease is the more advanced should be operated on without delay; and the surgeon will be guided in his treatment of the fellow eye by the result of the operation on the first eye.

4. To insure the best result, the incision should be made well in the sclerotic with a narrow cataract knife or a broad lance knife, and the entire iris, from one end of the incision to the other, should be carefully torn or excised from its insertion.

5. The most carefully performed iridectomy by skillful

hands is sometimes followed by rapid loss of what sight still remains, sometimes partial, but unfortunately sometimes total.

6. A successful result is in the majority of cases more likely to follow the operation if it is performed early in the course of the disease, but the maintenance of the existing degree of vision even in these cases is not invariable.

7. As regards the question of symmetry, it is probable that in the large majority of cases, probably as much as 80%, the disease is sooner or later present in both eyes, and a careful study of the cases seems to establish the fact that there can be no specific interval of time which ensures the second eye against an attack.

8. If the patient is old and feeble and one eye is still free from disease for a year or more after the other eye has become affected, it may be considered prudent to avoid an operation on the affected eye; as it is probable that the unaffected eye may remain free during the remainder of the patient's life.

9. The condition of the field of vision is no constant guide either in forming a prognosis as to the progress of the disease or in deciding as to the time of operation.

10. The acuity of vision bears no constant relation to either the success or failure of the operation.

11. The anterior chamber is usually shallow, is occasionally entirely absent, but is often apparently normal in depth. The condition of the chamber gives no reliable hint as to the state of the vision or the visual field nor any indication as to prognosis.

12. The appearance and motility of the iris appear to have some bearing upon the prognosis, though perhaps not to the extent believed by Nettleship. The latter states that in the cases in which the iris reacts rapidly to eserine the operation proves successful. This has not always been the experience of the reporter, but in the majority of the cases in which eserine caused rapid contraction of the pupil, the visual acuity was fairly good and the field was not seriously limited.

13. The depth of the excavation in and the color of the optic disc seem to have no close connection with the defective

vision or with the limitation of the visual field, nor did they offer any constant guide as to prognosis or to the effect of an operation upon the progress of the disease.

14. The condition of the intra-ocular tension is a very uncertain guide in deciding the time for operating. It may be normal or increased or even diminished. It does not even seem to bear any constant relation to the degree of usual acuity or to the state of the visual field. The steady maintenance of the increased tension, however, without any diminution, almost invariably indicates the necessity for an immediate operation, and this necessity is especially indicated if the tension is continually on the increase.

15. The health and age of the patient exert a decided influence upon the effect of the operation. Any marked evidence of senility is distinctly unfavorable to operation.

DISCUSSION.

DR. H. KNAPP, New York.—During the past nineteen years I have operated on 670 cases of glaucoma, 226 of which were cases of chronic glaucoma. I think that the prognosis may be a little more favorable than has been indicated by Dr. Bull. I have had four cases in which malignant disease followed operation for chronic glaucoma. I do not agree with the author as to the advisability of the continued use of pilocarpine or eserine in those chronic cases were operation seems doubtful. I advise its use when there are recurrent symptoms. In prognosis I am guided a great deal by the condition of the iris. My operations have been done with the lance-shaped knife. I consider it of great importance to carefully reduce the edges of the coloboma, not only by external pressure but also by the use of the blunt probe. I am also careful not to make the operation too peripheric. Peripheric wounds are more liable to cystoid scars.

IRIDECTOMY IN GLAUCOMA.—By Dr. Emil Gruening, New York.

The speaker classified the different forms of glaucoma under the following heads:

1. Acute inflammatory.

2. Chronic inflammatory without visible degenerative changes in the iris.

3. Chronic inflammatory glaucoma with visible degenerative changes in the iris.

4. Simple glaucoma.

5. Intermittent glaucoma. He described cases illustrative of these different varieties.

DISCUSSION.

DR. S. O. RICHEY, Washington.—I do not believe simple chronic glaucoma to be entirely a local affection. I think that it is a local expression of a cause to be looked for in the nervous system. I have used eserine with satisfaction in the early stages but support it by galvanism applied to the cervical ganglia. In some cases this will enable us to avoid operation.

DR. SAMUEL THEOBALD, Baltimore.—I have met with one case in which an attack of pronounced acute glaucoma was cut short by the use of eserine.

DR. C. S. BULL, New York.—Eserine is frequently used in too strong solution. A solution of half a grain to the ounce may cause iritis after a single instillation. I never use a stronger solution than this. I often use one as weak as one-tenth of a grain to the ounce.

DR. B. ALEX. RANDALL, Philadelphia.—I can confirm the remarks in regard to the value of weak solutions. In one case of serious absolute glaucoma a solution of $^1/_8$ grain to the ounce was entirely successful in relieving the pain. It has been used steadily for three years with no recurrence of the severe symptoms and without the intervention of any inflammatory trouble.

DR. S. D. RISLEY, Philadelphia.—In experimenting with weak solutions of eserine I have found that a distinct effect was experienced from a solution as weak as one-thirteenth of a grain to the ounce. If this was applied three times a day, it would in two days cause distinct brow-ache. I have seen benefit from weak solutions when stronger solutions failed to give relief.

Dr. Henry D. Noyes, New York.—One point to which my attention was called many years ago is that in certain instances of evident glaucoma with a large amount of refractive error, it has seemed that the aggravation of the glaucomatous disease has been dependent upon the accommodative strain. In operating I have gradually withdrawn from the extremely peripheral plan of incision. I prefer to come closer to the border of the cornea than some do. This involves less risk and is easier of performance.

Dr. Samuel Theobald, Baltimore.—My experience tends to convince me that astigmatism and particularly astigmatism against the rule, is frequently the cause of glaucoma.

Dr. Arthur Mathewson, Brooklyn.—In one case of glaucoma in which iridectomy had been done without arresting the progress of the disease a large injection of strychnia caused a decided improvement of vision which continued. I have used it in other cases with good effect.

The Use of the Currette in Trachomatous Pannus.—By Dr. Emil Gruening, New York.—

The speaker after referring to the various measures proposed for the relief of this condition, described an operation which he had employed in eleven eyes during the past two years. A 6% solution of cocaine was first instilled. The surface of the cornea and the vessels present were then scraped away with a gouge shaped instrument and the vessels followed well on to the conjunctiva. The eye is then washed with boric acid solution and warm compresses applied for four or five days. In three cases new vessels formed and the operation was repeated. The ultimate result in all the cases was highly satisfactory. In old and protracted pannus, this operation may be recommended for its directness, simplicity and efficacy.

DISCUSSION.

Dr. S. B. St. John, Hartford.—I have used this operation in one case with the highly gratifying result of increasing the vision from $^{4}/_{cc}$ to $^{16}/_{cc}$. This has since still further improved.

Dr. H. F. Hansell, of Philadelphia, read a paper on:

Corneal Abscess.

Describing its symptoms and referring to the differential diagnosis between it and ulcer, he protested against the use of cocaine in abscess or other inflammatory conditions of the cornea. A few drops of a strong solution will often destroy the epithelium. Instillation of eserine alternating atropine was recommended. Operative interference should be limited to evacuation of the pus.

Further Observations on Malarial Keratitis.—By Dr. Chas. J. Kipp, Newark, N. J.

The author had called attention to this condition in a paper read before the society in 1880. He had seen 120 cases of the disease. In all there had been paroxysms of malarial fever and in 90% the corneal inflammation followed a few days after a paroxysm. In 25% the patients had suffered from similar trouble in nervous attacks of malaria. The inflammation of the cornea occurred in the form of serpiginous ulceration, with narrow prolongations. The trouble began on a line of small grayish elevations, which soon broke down, forming a furrow of ulceration. In mild cases the duration is two or three days, while in severe cases it may last several months. There is a marked tendency to recurrence in subsequent attacks of malarial fever. In a few cases he had seen a similar affection in non-malarial individuals. The treatment consists in remedies directed to the general condition and in mild cases with warm fomentation. In severe cases a 1% or 2% solution of nitrate of silver applied directly to the furrows after the use of cocaine answers well. In some very severe cases the actual cautery was employed. This arrested the progress of the disease and stopped the pain, provided the malarial trouble had previously been cured.

DISCUSSION.

Dr. Henry D. Noyes, New York.—During the past 15 or

20 years I have met with cases of superficial keratitis due to malaria. It is rare to find the deeper tissues invaded. I am led to suspect a malarial origin in cases where there is exaggerated tenderness of the supro-orbital nerve and distinct anæsthesia of the surface of the cornea. The form of ulcerative keratitis which has been described I regard as of mycotic origin and have cured it by scraping thoroughly the lines of infiltration.

Dr. T. Y. Sutphen, Newark.—I have seen cases similar to those described by Dr. Kipp in patients suffering with malaria, and where there has been no distinct chill, the individuals have resided in malarious districts.

Dr. John Green, St. Louis.—I have seen many cases in which malarial fever was followed by superficial keratitis or keratitis modified by neglect or improper treatment. I have not met with the form described by Dr. Kipp.

Dr. Emil Gruening, New York.—I have seen this form of ulcerative keratitis, but I have associated it with the teeth. These patients have had tartar on the teeth and have been in the habit of moistening the lids with saliva. I think therefore that the source of infection is in the mouth.

Dr. Samuel Theobald, Baltimore.—I have also seen for many years this keratitis associated with malarial trouble. These cases do not always show ulceration of the cornea. I have in a general way regarded this condition as analogous to herpes zoster. I have once or twice seen iritis associated with the keratitis following malaria. In one case of malaria I have seen this keratitis with herpes zoster of the temple.

Irrigation of The Anterior Chamber.—By Dr. J. A. Lippincott, Pittsburg.

This procedure is useful for the removal of debris in cataract extraction and of clotted or liquid blood. In order to accomplish this successfully it is necessary to have an apparatus which can be readily made and kept aseptic; which will always be ready for use; which can be easily handled and the movement controlled with one hand; whose ejecting force is

capable of being easily regulated; and which is free from liability of forcing air bubbles into the anterior chamber. As fulfilling these requirements he exhibited an apparatus consisting of a small metal receptacle with which was connected a rubber tube ending in a metal nozzle, the flow of liquid being controlled by a short piston in a rubber handle through which the rubber tube passed. The ejecting force can be varied by elevating or lowering the receptacle.

Dr. E. Gruening, New York, exhibited a small flask devised by Græfe for the same purpose.

Dr. David Webster, New York, exhibited

Two Specimens of Sword Fish's Eyes.

Dr. Henry D. Noyes, New York, exhibited

A Spectacle Frame,

in which the nose piece of the eye glass was combined with the ordinary spectacle frame.

Enucleation of the Eye in Pan-Ophthalmitis.—By Dr. Henry D. Noyes, New York.

There have been reported by various observers 30 or 40 deaths following enucleation, almost all from meningitis. About one-half of the fatal cases have occurred after enucleation during acute suppurative pan-ophthalmitis. At the New York Eye and Ear Infirmary there have been no deaths from this cause, when no additional operation in the orbit, such as the removal of tumors, etc., has been done. The number of enucleations from 1868 to 1888 was 1164; the number of eviscerations 17. Panophthalmitis existed in 14% of the cases. It seems fair to conclude that while a small risk to life is incurred by enucleation of the eye, the supposed increased risk by the existence of suppurative panophthalmitis is not so far justified by the facts as to bar its performance in this condition. Adjourned.

Afternoon Session.

The Treatment of Caries and Necrosis of the Orbit.—By Dr. H. Knapp, New York.

The upper wall of the orbit is the most frequent seat of dis-

ease and here its consequences are most dangerous. In every case of caries and necrosis of the orbit the condition of the neighboring cavities, and especially the nose, should be carefully investigated. Foci of suppuration should be freely opened, the cavity thoroughly cleansed and drainage established. This can be well accomplished by small silver tubes provided with flanges. Rough bone should be scraped away with a sharp spoon. Necrosed portions of the bone should be removed as soon as they become loose or when they can be detached without injury to adjacent tissues. The eye-ball should be protected and if there is insufficient closure of the lids, a plastic operation should not be postponed until the cornea becomes ulcerated from exposure.

MULTIPLE CYSTS OF THE IRIS OCCURRING IN BOTH EYES.—By Dr. H. W. Williams, Boston.

The subject was a girl æt. 9 years. In the right eye was a projection resembling a large cyst extending from the upper margin of the pupil. A similar growth projected from the temporal border. At the inner part there were two small pedunculated growths. All were of the color of the iris. In the left eye, two somewhat oval cysts filled the pupillary space. Through the square opening left in each pupil there was a little oblique vision.

SARCOMA OF THE OPTIC NERVE.—By Dr. T. Y. Sutphen, Newark.

The patient was æt. 10 years. The tumor involved the left orbit and was of two years duration. It was of a mushroom shape and sprang from the optic nerve. Its size was 6 in. by 5 1-4 in. and 2 inches thick. It was readily removed with curved scissors. As much as possible of the nerve was removed.

EXTENSIVE VASCULAR GROWTH IN THE VITREOUS.—By Dr. George C. Harlan, Philadelphia.

The patient, a woman æt. 50 years, presented herself Novem-

ber 28, 1888, on account of disturbance of vision. Examination of the right eye showed the fundus to be slightly hazy, with small dull white spots about the macula, the remains of old hæmorrhages, but no recent exudation. The disc was obscured by a delicate network of vessels. Otherwise there was no opacity. There was no stroma. Up to March 2, 1889, there had been several retinal hæmorrhages, but there had been no change in the vascular membrane. Vision had been reduced to $^{20}/_{LXX}$.

EXTRACTION FROM THE VITREOUS OF PIECES OF STEEL BY THE MAGNET.—By Dr. O. F. Wadsworth, Boston.

The author described two cases in which the piece of steel was removed by passing an electro-magnet into the vitreous through an opening in the sclera. In the second case, the operation was followed some weeks later by a separation of the retina, beginning at a point opposite that at which the puncture was made.

CORNEAL TRANSPLANTATION.—By Dr. J. O. Tansley, New York.

The speaker reported a case in which he had done this operation for opacity of the cornea. At the first operation the opacity was not removed to its full depth and although the cornea cleared to a certain extent, the result was not satisfactory. The operation was therefore repeated, but without any improvement in vision. In both operations there was primary union of the graft and in neither was there any inflammatory reaction.

DISCUSSION.

DR. L. WEBSTER FOX, Philadelphia.—I have performed the same operation in a case of opacity of the cornea when the patient could just distinguish light from darkness. The graft healed readily without inflammatory reaction and the patient obtained useful vision and could almost count fingers.

An Analysis of Some of the Ocular Symptoms Observed in So-called General Paresis.—By Dr. Chas. A. Oliver, Philadelphia.

These observations were made on 20 well-marked cases of general paralysis of the insane. The study was limited to subjects in the so-called second stage of the disease, where the psychical symptoms become of such a character as to necessitate control and where motor and sensory derangement had become more or less manifest. Care was taken that each subject was seemingly free from any extraneous general disease or local disorder and the entire study was limited to the male sex, so as to escape any conflicting and complicating changes that might appear in connection with the many diseases peculiar to the female sex. Thirty observations were made, resulting in the following summary:

1. The sensory changes herein described, which have been limited to unequal optic nerve degeneration, decrease of retinal circulation, with sub-normal, direct and excentric vision for both form and color, distinctly show lowered sensory response.

2. The motor symptoms, consisting in unequal and feeble movement of the irides, causing inequality and irregularity of pupillary areas, the peculiar form of ataxic nystagmus, the slight loss of ciliary tone, all express want of proper muscle action—true paresis.

3. The peculiarly local conditions shown in the fundus, such as the pigment massings, the crescents of absorption, the disturbed and granular condition of the choroid, etc., all indicate wear and tear of an abused and irritated organ.

4. Therefore these observations upon the ocular apparatus, which were most probably made during the second stage of the disease known as general paralysis of the insane, show not only local changes, but distinctly demonstrate that the series of sensory motor disturbances found are but the peripheral expressions of one of the many indices of gradual loss of neural strength and power in this disease.

Dr. George C. Harlan, Philadelphia, reported a case of

HYSTERICAL BLINDNESS

of ten years duration in a male æt. 22 years.

DR. SAMUEL B. ST. JOHN, Hartford, described a case of

HEMIANOPSIA

with peculiar cerebral symptoms.

DR. B. ALEX. RANDALL read a paper on

SIMPLE TESTS OF THE OCULAR MUSCLES.

A CASE OF DOUBLE PURULENT CHOROIDITIS RESULTING FROM MENINGITIS.—By Dr. T. Y. Sutphen, N. J.

February 23, 1887, I was called in consultation to see G. W. B., a robust farmer, æt. 39 years. He had always been healthy, with the exception of an occasional "billious headache." Never had had any specific trouble. The history was that on February 9 he came in at noon perspiring very freely. That evening he suffered with intense headache. The next morning he was apparently well, but at breakfast had a violent chill with aching of the whole body. This was followed by high fever. Leaving the breakfast table was the last that the man remembered for three months. From this time the patient rolled and tossed in bed without decided delirium, but being in a stupid condition and easily restrained. Questions were answered only after frequent repetition and the replies ran into complete incoherence. On the third day of the illness the body became quite rigid with the head thrown backwards. On the fourth day, the left hand and forearm became swollen and the right eye inflamed. The left eye became inflamed on the tenth day. Later the left foot became swollen. The swelling of the hands and foot lasted about a week and then subsided. The fever then became less violent and the general condition improved, but the mental sluggishness remained. There was no paralysis, no convulsion, no vomiting. At the end of the third week he had a slight chill and another after he was out of bed.

At present the man is apparently in good health. He has lost none of his functions and the mind is perfectly clear. When first seen by the writer the eyes were in the following

condition: No swelling of the lids; moderate pericorneal injection; cornea clear; anterior chamber normal in depth; irides slightly discolored; pupils moderately dilated, with a yellowish reflex from the anterior portion of the vitreous. There was no perception of light; no tenderness on pressure, but a marked lessening of the tension of the globe. Three days later, the anterior chamber in each eye was obliterated by pressure from behind the lens; the eye-balls being harder than normal. One week later, the anterior chamber was again restored and tension had again fallen much below the normal. From that time on there was progressive atrophy of both eyes, until now there is left only the greatly shrunken globes, with of course absolute blindness.

In this case there must have been an extension of the intracranial inflammation along the sheath of the nerves and not a forcing of the products of inflammation forwards, as sufficient pressure within the cranium to produce this must evidently have become apparent by more or less paralysis.

The case is reported simply as a clinical contribution to this somewhat rare and obscure trouble which is certain to be met with in the course of practice. Adjourned.

Thursday.—Morning Session.

Contributions to the Subject of Tumors of the Orbit and Neighboring Cavities.—By Dr. C. S. Bull, New York.

Case 1—was an adeno-sarcoma of the lachrymal gland. It was operated on two years ago. There has been no return.

Case 2—was one of abscess of the ethmoid cells, frontal sinus and orbit in a male æt. 46 years. It was opened, washed out, and drained. There was perfect healing.

Case 3.—Tumor of the maxillary antrum, nasal fossa, ethmoid cells, orbit and cranial cavity. The eye was enucleated; the maxillary antrum cleaned out. A large opening was found through the orbit into the anterior fossa of the skull and through this the tumor extended. The evening following the operation the patient became comatose, and died the next morning.

DISCUSSION.

DR. H. KNAPP, New York.—The report of these cases shows the necessity of early operation in all cases of tumors of the orbit or near the orbit.

DR. B. A. REEVE, Toronto.—In a number of these cases of empyema of the frontal sinus I have found hypertrophy of the middle turbinated bone. This is a point of importance in etiology and prophylaxis.

[TO BE CONTINUED].